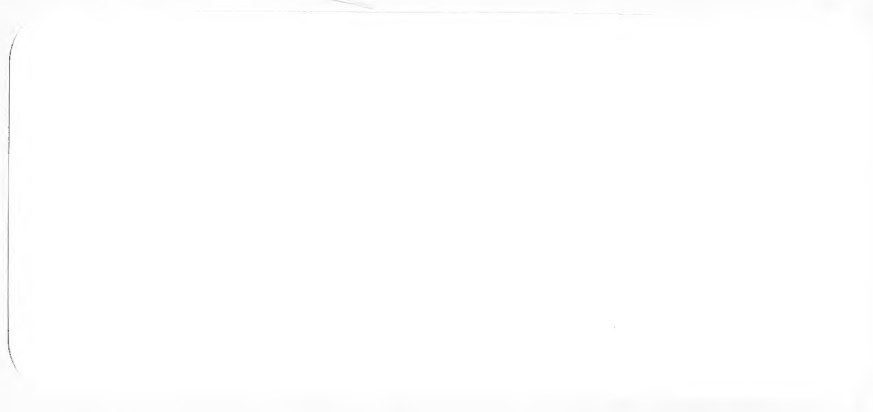# Faculty Working Papers

THE GRANT COMPONENTS IN OFFICIAL
UNITED STATES ECONOMIC AID TO
LESS-DEVELOPED COUNTRIES, 1953-1969

Janos Horvath, Patrick Yeung
and Carl J. Gahwiler
University of Illinois

College of Commerce and Business Administration
University of Illinois at Urbana-Champaign

THE GRANT COMPONENTS IN OFFICIAL
UNITED STATES ECONOMIC AID TO
LESS-DEVELOPED COUNTRIES, 1953-1969

Janos Horvath, Patrick Yeung
and Carl J. Gahwiler
University of Illinois

THE GRANT COMPONENTS IN OFFICIAL UNITED STATES
ECONOMIC AID TO LESS-DEVELOPED COUNTRIES, 1953-1969

Janos Horvath, Patrick Yeung, Carl J. Gahwiler

I. INTRODUCTION

With the recent development of grants economics, the real transfers
involved in economic aid by advanced countries to less developed ones
can be assessed on a quantitative subsidy basis. The purpose of this
paper is to measure and analyse the grant component in official[1] United
States economic aid to less-developed countries from 1953 to 1969. The
United States is chosen, not only because of the availability of rele-
vant statistical data, but because she merits special study as contribu-
tor of over half of net global foreign aid.

This paper is organized as follows: Section II lays out the conceptual
framework for analysing the grant component in foreign aid; section III
describes the official United States foreign assistance programs in con-
junction with the empirical analysis; and section IV presents the sum-
mary of our findings and conclusions.

II. CONCEPTUAL FRAMEWORK

Economic Aid

Our definition of economic aid in this paper follows the O.E.C.D.
(Organization for Economic Cooperation and Development). It consists
of "all flows to less-developed countries and multilateral institu-
tions provided by official agencies,"[2] which meet the following tests:

   (a)   their prime objective is to promote economic welfare and

         development in less-developed countries; and

   (b)   their financial terms are intended to be concessional.

Grants

"Grants economics identifies the bilateral exchange versus the uni-
lateral transfer components in the varying admixture of market and non-
market economic activity."[3] A grant in this context is an outright gift
for which no repayment or favor is directly expected in the sense of an
exchangeable quid pro quo.[4] Certain portions of U.S. aid are 100 percent grant
(e.g., Peace Corps expenditures, contributions to multinational organiza-
tions, surplus food donations, etc.). In addition, there are significant
grant elements in development and Eximbank[5] loans, due to their varying
concessionary terms. A loan at (or above) the prevailing market rate
of interest and without concessions in repayment terms contains zero (or
negative) percent grant. As the loan terms "soften" from this point,
the proportion of grant increases, approaching 100 percent (though never
reaching it as long as repayment of some kind, regardless of how conces-
sional or "soft," is due). Our task in this research is to identify

the grant components (from 0 to 100 percent) in various official U.S. foreign economic aid programs.

The Grant Component of Economic Aid

The grant (subsidy) component of an economic aid program may be measured in absolute value, called "grant equivalent," or in relative terms, called "grant ratio." The latter is the ratio of the grant equivalent to the value of the aid committment. If the grant equivalent is equal in value to the aid committment, the grant ratio is 1. The grant ratio therefore varies between the extremes of 0 and 1.

Since the nominal or face value of the aid committment constitutes the base from which the grant equivalent or the grant ratio is computed, neither measure of the grant component presents a complete accounting of the net cost or sacrifice of the aid program to the donor or its total impact (positive or negative benefit) on the recipient. This is a limitation of the present state of grants economics for which much additional research is needed. On the empirical level, the effects of grants have not been successfully cast within a completely specified cost-benefit framework. Understandably, this is due in large measure to the difficulty in measuring all secondary effects or repercussions of economic aid.[6] We shall therefore rely on the conventional "pure" measures of the grant component in economic aid, that is, on what may be called the "contract terms basis" which will become clear as we proceed.[7]

Concessionary Factors

In attempting to measure the grant equivalent embodied in foreign economic aid loans, concessionary factors are crucial. At the outset, the contract terms of the loan to be considerered are the interest

rates, years of maturity, and moratorium (grace) periods. Goran Ohlin's pioneering formula may be used to yield the familiar grant ratio.[8] This formula calculates the discounted present value of the loan principal and interest repayments. These repayments are deducted from the face value of the loan, the difference being the grant equivalent of the loan. The grant equivalent can be considered as the value of the re-sources sacrificed by the donor country because of its aid loan at com-paratively "soft" terms as against the return which could presumably be earned if invested for commercial profit (the opportunity cost) in de-veloping countries.

During the grace years, only interest is repaid. Interest and prin-cipal repayments are made during the remainder of the loan period un-til maturity. The interest during the grace and non-grace years may differ.

Following Ohlin,[9] the present value of the grace years interest repayments is given by:

$$P_1 = \int_0^M i_M L \, e^{-qt} \, dt = \frac{i_M}{q} L (1 - e^{-qM})$$ (1)

and that of the non-grace years principal and interest payments is:

$$P_2 = \int_M^T \left[\frac{L}{T-M} + i_T L \left(1 - \frac{t-M}{T-M} \right) \right] e^{-qt} \, dt$$

$$= \frac{i_M}{q} L \, e^{-qM} + \left(1 - \frac{i_T}{q} \right) L \frac{(e^{-qM} - e^{-qT})}{q(T-M)}$$ (2)

where

L   face value of loan

P   present value

i_M interest during grace years

i_T interest during nongrace years

q   comparative rate of discount (opportunity cost)

T   maturity of loan (in years)

t   individual years within the loan maturity

M   grace period (in years) i.e., moratorium

e   base of natural logarithm, 2.718

The grant ratio, g, is given as:

$$g = \frac{L - (P_1 + P_2)}{L} \tag{3}$$

Inserting the P_1 and P_2 values and simplifying,

$$g = 1 - \left[\frac{i_M}{q}(1-e^{-qM}) + \frac{i_T}{q} e^{-qM} + (1 - \frac{i_T}{q}) \cdot (\frac{e^{-qM} - e^{-qT}}{q(T-M)}) \right] \tag{4}$$

For a "typical" example, a loan which has a 10-year grace period at 2% in-
terest and a total maturity of 40 years at 3% interest (the 3% interest
is applied to the last 30 years of the loan), and using a comparative dis-
count rate (q) of 10%, gives,

$$g = 1 - \left[\frac{.02}{.10}(1-e^{-(.1)10}) + \frac{.03}{.10} e^{-(.1)10} + (1 - \frac{.03}{.10}) \cdot (\frac{e^{-(.1)10} - e^{-(.1)40}}{.1(40-10)}) \right]$$

$$= 0.6816 \text{ (or } 68.16\% \text{ grant).} \tag{5}$$

Trading Factors

     Our formulation of the grant ratio in this research goes beyond that
of Ohlin's to include the recent expanded considerations of Janos Horvath
to which he refers as "trading factors" as distinct from concessionary
factors.[10]   These trading factors include: (1) tied aid; (2) loans repay-
able in local (recipient country's) currency; and (3) surplus commodities.

(1) <u>Tied aid</u>: The tying of aid to purchases in the donor country tends to reduce the aid value to the recipient. This results if the prices paid for equipment or commodities in the donor country are higher than world market prices, or if such equipment is designed inappropriately for the recipient country's utilization.[11] To the extent that the recipient country is restricted from importing from the cheapest source, the extra cost clearly reduces the grant element of the aid transfer.[12]

The computation of the tied aid adjustment factor, designated as g_1, is made according to the formula:[13]

$$g_1 = \frac{P_w - P_{U.S.}}{P_w} \text{ x percent of aid tied}$$

where

P_w = the price index on the world market

$P_{U.S.}$ = the U.S. price index

Tied aid contains a "negative grant." It is acceptable to recipient countries because "tied aid is better than no aid."[14] There may be cases in which the direct costs from aid tying not only reduce but even offset the concessionary benefit of the loan terms. The U.S. inititated aid tying policies in 1959 with the intention to ease balance of payment pressures. The balance of payments gain from tied aid, however, is less than the face value of the aid because, even if aid were offered untied, it is likely that at least a few commodities would be purchased in the donor country. The true gain in trade expansion is the difference between the export under the regime of tied aid and those exports attributable to an equivalent amount of untied aid.[15] Throughout this analysis we assume that forty percent of aid amounts would be spent in the United States even without tying; this appears to be a conservative estimate because, during 1959, before aid-tying restrictions were imposed, the percentage of U.S. aid-

financed commodities purchased domestically was 47.41 percent and similar fig-
ures prevailed for earlier years.

(2) Loan repayment in local currency: In the 1950's and early
60's, local currency loans comprised the major portion of U.S. develop-
ment assistance and, after 1962, were gradually converted to dollar
values. Since 1967, virtually all development loans were on dollar
repayment terms.[16]

As local currency loan arrangements prevent the conversion of
the repayments to U.S. dollars (or any other currency), their monies
eventually return to the recipient country. Specifically, the U.S.
retains part of the proceeds for its own uses within the recipient
country (e.g., for payment of embassy personnel, scholar exchange acti-
vities, etc.), and returns the remainder in the form of loans and out-
right grants. For this reason, the O.E.C.D. treats local currency
loans as grant-like-flows which is technically inaccurate. John Pincus
estimated them as 30 percent grant and 20 percent loan.[17] To identify
precisely the Pincus estimate, local currency loans are analyzed by
the following procedure:

Initially they are submitted to the grant ratio formula described
above. From the "exchange equivalent" (the grant equivalent complement),
the funds designated for U.S.-use are deducted. Of the remaining exchange
equivalent, the portion designated for grants is valued as 100% grant,
and the loan portion is submitted to the grant ratio formula a second
time. The second exchange equivalent is subject to one final manipu-
lation to arrive at the local currency re-loan factor, designated as
g_2. The repayment funds are blocked except for U.S.-use in the recipi-
ent country. "The trick is to value the blocked local currency at its

.

true worth to the donor country by use of what is called a 'shadow' rate of exchange, as opposed to the nominal rate; in other words, the rate at which the donor would be willing to buy the blocked balances."[18] The calculation of this "shadow exchange rate" index is presented in the Appendix, Table B. The index is multiplied by the percent of total aid which the blocked local currency loans represent. The product reflects the official (higher) exchange rate versus the market rate and, therefore, indicates an additional grant component. Due to occasional currency depreciation, the g_2 trading factor's grant ratio is raised 15.4 percent.[19] The factor is raised an additional 50 percent to account for waivers on installments and interest in connection with their particular items.[20]

(3) Surplus commodities:

For the third trading factor, Horvath[21] provides a generalized formula to reduce the domestic, government supported price of surplus agricultural commodities to export market values. However, as the agricultural aid data were obtained in terms of export market values,[22] the third trading factor formula needs no elaboration here.[23]

Comprehensive Grant Ratio

From the preceding discussion, the appropriate final grant ratio formula which adjusts for the trading factors is[24]

$$g' = g + (-g_1 + g_2) \tag{7}$$

where

    g' the comprehensive grant ratio

    g the conventional grant ratio (a la Ohlin)

    g_1 the tied aid factor

    g_2 the local currency factor.

III. EMPIRICAL ANALYSIS

The period chosen for this study is 1953-1969, because during the post-World War II years prior to 1953, U.S. foreign aid was directed principally toward European recovery under the Marshall Plan, and was not extended on a world-wide basis until 1953. Direct military aid is excluded from our scope of consideration. Currently, U.S. foreign aid is administered through four channels: the Agency for International Development (A.I.D.), the Peace Corps, the Export-Import Bank (Eximbank), and the Food for Peace program (P.L. 480).

Program Evolution

From 1948 to 1952, the Economic Cooperation Administration (E.C.A.) administered U.S. foreign aid. The Mutual Security Act was passed in 1951 and reported on aid transactions through 1953. The Foreign Operations Administration (F.O.A.) was the official agency from 1953 to 1955. Thence, the International Cooperation Administration (I.C.A) was organized and operated until 1961. The Development Loan Fund was established and operated concurrently from 1957 to 1961. In 1961, all predecessor agency functions were taken over by the present Agency for International Development (A.I.D.).

Public Law 480, the Agricultural Trade Development and Assistance Act, was passed in 1954, and administered surplus agricultural commodities under the Food for Freedom program. In 1966, Public Law 808 was passed, giving rise to the Food for Peace Act. (The program is still commonly referred to as P.L. 480 in spite of the legislative change.)

The Peace Corps was created in 1961.

The Export-Import Bank has existed since 1934. This institution,

to promote U.S. exports, is not financed by the Federal budget. Although Eximbank has the possibility of borrowing on favorable terms from the U.S. Treasury, its resources are obtained mainly through loan repayments.

Agency for International Development

A.I.D. administers funds under the following categories:

(a) Development Loans: Loans are offered in both dollars (donor country's currency) and local (recipient country's) currency. They are authorized on the basis of project, program, and sector loans.

(b) Supporting Assistance: This category is granted primarily to combat economic or political instability in countries engaged in major defense efforts, and in the 1950's was termed Defense Support. Approximately 10 percent of supporting assistance is termed counterpart funds.[25] This portion, designated for U.S.-use in the recipient country, constitutes an exchange element and is therefore excluded as grant.

(c) Technical Cooperation (also termed Technical Assistance): This type of aid is considered 100 percent grant and consists of (i) students, trainees, experts, and volunteers sent to foreign countries, (ii) the supply of equipment for research or training, and (iii) the support of educational programs. (The Peace Corps is considered a special form of technical assistance.)

(d) Multinational Assistance: Two types of aid are covered by this category: (i) contributions to the development effort of the United Nations and its associative organizations, and (ii) capital subscriptions to multilateral financial institutions. These funds are treated as full grants.

(e) Contingency Fund: These appropriations are reserved for emer-

gency situations resulting from economic or political crises. They are treated as full grants.

(f) Administrative Expenses: These appropriations, considered as part of the cost of assistance, are treated as full grants.

Peace Corps

See (c) Technical Cooperation above.

Export-Import Bank

Eximbank is in a sense two institutions: one issues insurance and guarantees, and the other authorizes various types of loans. The former transactions are not considered foreign aid. The latter consists of (i) long term loans, (ii) commodity credits, (iii) exporter credits, (iv) special foreign trade (emergency) credits, and (v) discount credits. Within our present context, only long term loans and exporter credits are considered as foreign aid, while the others are not.[26] The distinction is made because emergency credits are used primarily for direct military purposes (which is outside of our scope of consideration) or for stabilizing local currency crises, with the credits for the latter usually being cancelled before utilization; commodity credits, designated for the exportation of raw cotton, are exchange transactions; so are discount credits, initiated in 1966, which are made available to U.S. commercial banks at or near private interest rates against their holding of export debt obligations.

Food for Peace

In 1954, P.L. 480 consisted of three aid categories: Title I (sales for local currencies), Title II (donations for emergency relief and economic assistance), and Title III (donations to U.S. voluntary

agencies). Title IV (sales for dollars) was introduced in 1959. In 1966, the earlier programs were replaced by P.L. 808 which provided two categories: Title I (sales for dollars and local currencies) and Title II (donations). Barter is also included and consists of the exchange of agricultural commodities for (i) materials for which the U.S. is a consistent net importer, (ii) commodities required for foreign aid programs, and (iii) materials or equipment required for off-shore construction programs.

We treat sales for dollars and local currencies as foreign aid loans, and all donations as 100 percent grants. As regards barter, 25.67 percent of all P.L. 480 agreements from 1954 to mid-1969 are earmarked for U.S.-use, constituting an exchange element. Deducting this percentage, the remainder is treated as full grants.[27]

Computations

In computing the grant ratios and grant equivalents, the following stipulations are made:

(a) A comparative (i.e., opportunity) rate of discount 10 percent is utilized throughout the analysis which represents the rate of return private investors expect to earn in developing countries. This rate is also used in O.E.C.D. calculations and, therefore, provides a basis for comparison.[28]

(b) All data are presented on the basis of aid commitments rather than actual deliveries, for which data are often difficult to come by. Commitments, defined as firm obligations, are the best means to assess comparatively donor aid policies and are a useful indication of the direction the programs may be expected to take.

(c) Prior to 1964, due to the absence of detailed information,

yearly averages are used for the loan terms applied to the respective total loan figures.

(d) In local currency P.L. 480 sales and local currency development loans, a percentage of the exchange equivalent is designated for U.S.-use (in the recipient country) with the remainder, termed country-use funds, returned to the recipient in the form of loans and grants. The percentage designated for U.S.-use from P.L. 480 sales is applied for development loans also.[29]

The results[30] of our computer-programmed computations are summarized and presented in Tables 1-3.

IV. FINDINGS AND CONCLUSIONS

An Assessment of the Grant Components

Yearly U.S. aid commitments, respective grant equivalents, and grant ratios are shown in Table 1. For the period of 1953-1969 the total aid commitment is $65.9 billion, the total grant equivalent is $47.9 billion, and the corresponding weighted average grant ratio is 0.7269. Table 2 reveals the comprehensive grant ratios. The ratios have been fairly constant with the exception of the last three years considered. During the full period analyzed, the figures have varied from a high of 0.8542 in 1953 to a low of 0.4996 in 1967. The effect of g_1 (aid tying) has varied from zero in base year 1953 to -9.67% in 1968. This trading factor's effect has been increasing, although fluctuations occurred. The effect of g_2 (soft currency loans), with minor variations, has been relatively negligible; below one-half percent on the average. The trend of the comprehensive grant ratio has shown a slow decline. This can be seen graphically in Graph 1, which also de-

picts the increasing trend of total official aid. Official aid reached
an all time peak of $6.191 billion in 1967.

A glance at Graph 1 reveals that major fluctuations in the compre-
hensive grant ratio occurred in four periods: 1955-56, +0.0934; 1956-57,
-0.1244; 1959-60, +0.0818; and 1966-67, -0.1382. In the 1955-56 period,
the increase is due primarily to two factors: (a) the Food for Peace
commitments (having, in general, high grant ratios), increased approxi-
mately three-fold, and (b) Eximbank funds (which have low grant ratios)
decreased by roughly one-third. Eximbank fluctuations are also the
prime influence in the remaining three periods. In the 1956-57 grant
ratio increase, Eximbank funds increased roughly five-fold; in the 1959-60
decrease, Eximbank funds were cut by approximately one-half; and in the
1966-67 decrease, Eximbank funds were decreased by a factor of nearly
two and one-half. Decreases in the comprehensive grant ratio reflect
a widening gap between total official aid and the grant equivalent.

Table 3 contains grant ratios of the various types of dollar and
local currency loans. The local currency loans generally have higher
grant ratios than dollar loans. While the terms of repayment usually
are harder in the local currency loans, the majority of their repay-
ments are re-lent or granted back to the recipient country, raising
significantly the grant ratio. Yet, in 1961-1964, the grant ratio
is higher for dollar development loans than for local currency develop-
ment loans. The main factor in this interesting paradox is that, in
these years, U.S.-use funds constitute more than the actual exchange
equivalent recovered from the local currency loans and even "borrowed"
temporarily a portion of the grant equivalent, thus reducing the total
grant equivalent in the original loan terms. The Table 3 also indi-

cates the decreasing trend of local currency development loans and local currency P.L. 480 sales, while P.L. 480 dollar sales are climbing.[31]

Furthermore, the computed grant ratios reflect the perennial over-haul of foreign aid policies.[32] Development loans and surplus commodity sales were offered during the 1950's at interest rates slightly over 3%, which was reduced to 0.75% in 1961. From this extremely generous condition, interest rates slowly have grown harder until the levels of 2% during grace years and 3% during nongrace years were reached in 1969. Another feature of the reduction in concessionary terms is that from completely untied aid prior to 1959 (except for Eximbank loans), the percent of U.S. aid-financed and domestically purchased commodities reached 98.94% in 1969.

Other Conclusions

Three principal conclusions are drawn from the subject analysis.

1. While total official U.S. aid generally has increased during the 1953-1969 period, the comprehensive grant ratio has experienced a slow decreasing trend. In only three fiscal years during the period analyzed, 1967, 1968, and 1969, has the ratio dropped below 60 percent. However, a significant point is to be made here. The huge increase of Eximbank loans is the prime factor in this recent grant ratio decrease. For example, in 1965, the grant ratio is 0.792 and, in 1967, it is 0.586. The exclusion of Eximbank loans from the calculations results in grant ratios of 0.856 and 0.840, respectively, thus reversing the apparent total grant ratio decrease.

2. The effects of tied aid have been estimated to average approximately 10 to 20 percent, with individual cases as high as 49.3 percent.[33]

The World Export Index (see the Appendix) has shown this figure to average 10.72% from 1953 through 1969 (14.25% during the last decade). The eroding effect on the grant ratio during the period analyzed has averaged -3.69% (-4.59% during the last decade).

3. The grant ratio of local currency development loans and local currency P.L. 480 sales during 1953-1969 is 0.7611 and 0.7588, respectively. In this connection, Pincus's[34] initial estimate of 80 percent grant and 20 percent loan is substantiated as quite accurate.

Table 1

U.S. AID COMMITMENTS AND GRANT ELEMENTS, 1953-1969

Fiscal Year	Total Aid Commitment (Millions of Dollars)	Total Grant Equivalent (Millions of Dollars)	Grant Ratio (g)
1969	3,789.2	2,461.5	.6496
1968	5,295.0	3,319.5	.6269
1967	6,191.0	3,626.9	.5858
1966	5,075.0	3,674.2	.7240
1965	4,271.4	3,383.0	.7920
1964	4,363.7	3,413.0	.7821
1963	4,472.3	3,543.4	.7923
1962	4,649.4	3,675.7	.7906
1961	4,276.2	3,127.2	.7313
1960	3,405.7	2,576.2	.7564
1959	3,791.7	2,557.9	.6746
1958	3,313.8	2,384.3	.7195
1957	4,256.1	3,045.6	.7156
1956	2,686.2	2,243.3	.8400
1955	2,224.3	1,660.8	.7466
1954	1,466.0	1,184.3	.8078
1953	2,374.9	2,026.7	.8534
Total	65,901.9	47,903.5	.7269

Sources:

Agency for International Development, Operations Report, Fiscal Years 1954-1969;

International Cooperation Administration, Operations Report, June 30, 1956-1961, and November 16, 1955;

Foreign Operations Administration, Monthly Operations Report, July 31, 1954;

Alexis E. Lachman, The Local Currency Proceeds of Foreign Aid (Paris: O.E.C.D., 1969);

Export-Import Bank of the United States, Fiscal Year 1967-1969 Reports; Washington.

Export-Import Bank of Washington, Report to the Congress, 1960-1966, and June 30, 1959,

Peace Corps, Seventh Annual Report, June 30, 1968;

U.S. Department of Agriculture, P.L. 480 Congressional Sales, September, 1970;

U.S. President, The Foreign Assistance Program, Annual Report to the Congress, Fiscal Years 1964-1969.

Table 2

U.S. COMPREHENSIVE GRANT RATIOS, 1953-1969

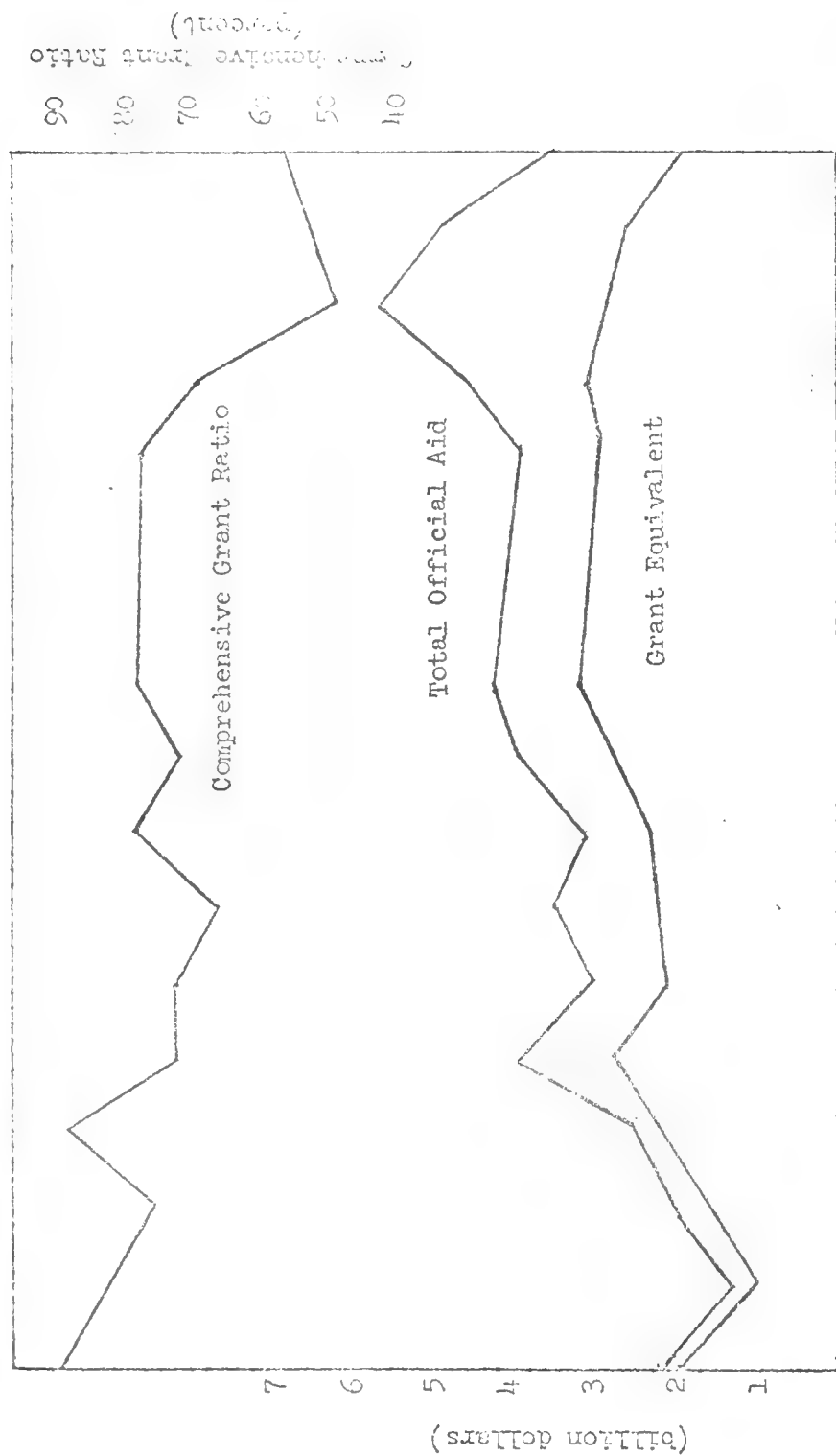| Fiscal Year | Grant Ratio (g) | Trading Factor Effects | | Comprehensive Grant Ratio (g') |
		Aid Tying (g_1)	Soft Currency (g_2)	
1969	.6496	-.0829	+.0008	.5675
1968	.6269	-.0967	+.0021	.5323
1967	.5858	-.0866	+.0004	.4996
1966	.7240	-.0458	+.0008	.6790
1965	.7920	-.0359	+.0030	.7591
1964	.7821	-.0260	+.0014	.7575
1963	.7923	-.0264	+.0009	.7668
1962	.7906	-.0227	+.0004	.7683
1961	.7313	-.0247	- -	.7066
1960	.7564	-.0116	+.0176	.7624
1959	.6746	-.0237	+.0033	.6542
1958	.7195	-.0123	÷.0080	.7152
1957	.7156	-.0097	+.0086	.7145
1956	.8400	-.0029	+.0082	.8453
1955	.7466	-.0088	÷.0043	.7421
1954	.8078	-.0030	+.0028	.8076
1953	.8534	- -	+.0008	.8542
Weighted Average	.7269	-.0369	+.0035	.6935

Source: Refer to Table 1.

Table 3

GRANT RATIOS OF U.S. FOREIGN AID LOAN PROGRAMS

(millions of dollars)

Fiscal Year	Dollar loans				Local currency loans			
	Develop-ment	Grant ratio	PL 480	Grant ratio	Develop-ment	Grant ratio	PL 480	Grant ratio
1969	722.2	.6831	411.0	.6099	- -	- -	337.0	.7709
1968	1,044.0	.7244	306.0	.6099	- -	- -	723.0	.8076
1967	1,108.6	.7234	178.0	.6138	- -	- -	803.0	.7839
1966	1.207.8	.7330	181.0	.6138	24.6	.7927	866.0	.7917
1965	1.128.0	.7641	158.0	.6138	34.9	.7937	1,142.0	.8517
1964	1.249.0	.8299	46.0	.6547	65.7	.7991	1,056.0	.8193
1963	1,159.2	.8172	58.0	.6956	128.8	.7997	1.088.0	.8416
1962	877.1	.8172	19.0	.7366	219.3	.7998	1,030.0	.8181
1961	261.8	.8092	- -	- -	392.7	.8001	951.0	.7368
1960	177.1	.5052	- -	- -	343.9	.7174	824.0	.6831
1959·	15.6	.5441	- -	- -	505.6	.7559	724.0	.4927
1958	7.6	.5164	- -	- -	244.5	.7517	658.0	.6960
1957	- -	- -	- -	- -	332.7	.7520	908.0	.6960
1956	8.4	.4904	- -	- -	202.4	.7446	439.0	.6877
1955	- -	- -	- -	- -	209.5	.7913	73.0	.6877
1954	- -	- -	- -	- -	100.0	.7330	- -	- -
1953	- -	- -	- -	- -	16.4	.7317	- -	- -
	8,966.4	.7601	1,357.0	.6182	2,821.0	.7611	11,622.0	.7588

Source: Refer to Table 1.

Graph 1. U.S. GRANT EQUIVALENT AND COMPREHENSIVE GRANT RATIO, 1953-1969

Comprehensive Grant Ratio (percent)

90 80 70 60 50 40

Comprehensive Grant Ratio

Total Official Aid

Grant Equivalent

1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969

7 6 5 4 3 2 1

(billion dollars)

Source: Tables 1, 2, and 3.

.

Appendix: INDEX COMPUTATIONS

Two indices are required in the trading factor analysis: one
to measure the relationship of United States versus world market
export prices and the other to reflect the difference between offi-
cial versus market currency exchange rates. The former is used in
the aid tying calculations to indicate the loss of exports had aid
been offered on an untied basis, while the latter is utilized in sha-
dow exchange rate calculations for local currency loans.

U.S. versus World Export Price Index

The index figures in Table A of this Appendix, which represent the
value of U.S. export prices, are assumed to reflect a "basket of goods"
commodity mix similar to actual aid-financed domestic commodity expendi-
tures. The United Kingdom, France, Germany, Italy, Canada, and Japan
are regarded as the countries which could effectively compete with the
United States for these commodity expenditures. Thus, the U.S. export
price index is compared with the average price index of the competing
countries and the percent difference is shown. This derived ratio re-
flects the loss of exports attributable to foreign aid due to the price
differential had aid been offered untied.[35]

Official versus Market Currency Exchange Rate Index

Due to limited availability of data, three countries, India, Pakis-
tan, and Brazil, are used in the calculation of the shadow exchange rate
index. These countries represent approximately 65% of the 1954-1969
P.L. 480 sales and approximately 47% of other local currency sales during
this period. The weighting of these countries, which reflects the flow

of financial resources in both categories, are: India 65%, Pakistan 21%, and Brazil 14%. The index calculated in Table B of this Appendix is assumed to approximate the data for the remaining countries in the group. The exchange rate considered for each year is the rate as of June 30.

To calculate the index, the average local currency units per U.S. dollar from Table B are utilized in the following manner:

India = $\dfrac{5.26}{7.56}$ = 0.696 at 65% weighting = 0.452

Pakistan = $\dfrac{4.41}{8.44}$ = 0.523 at 21% weighting = 0.110

Brazil = $\dfrac{75.76}{158.73}$ = 0.477 at 14% weighting = 0.067

$\qquad\qquad\qquad\qquad\qquad\qquad$ 100% $\qquad$ 0.629

Accordingly, 0.629 reflects the market value of local currency repayments, while its complement (1 - 0.629), 0.371, indicates the grant proportion which is to be utilized in the shadow exchange rate calculations for trading factor g_2.

.

Appendix: Table A. EXPORT TRADE INDEX: 1953 = 100

Country	1953	1954	1955	1956	1957	1958	1959
United States	100	99	100	104	107	106	109
United Kingdom	100	99	101	105	110 ·	109	109
France	100	94	95	99	101	97	89
Germany	100	98	98	101	103	103	103
Italy	100	99	98	102	102	101	94
Canada	100	98	99	103	105	103	105
Japan	100	96	91	94	97	94	94
Total Non-U.S. Index	600	584	582	604	618	607	594
Average Non-U.S. Index	100	97.3	97.0	100.7	103.0	101.2	99.0
$(P_{world} - P_{U.S.}) \div P_{world}$	--	-.0175	-.0309	-.0328	-.0388	-.0474	-.1010

Sources: United Nations Statistical Yearbook 1959, Eleventh Issue (New York, 1960); United Nations Statistical Yearbook 1965, Seventeenth Issue (New York, 1966); United Nations Statistical Yearbook 1969, Twenty-First Issue (New York, 1970).

1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
111	112	112	116	112	117	120	123	127	132
111	112	114	117	119	122	129	129	122	125
94	94	94	95	98	100	103	102	104	105
105	110	111	110	111	113	114	114	112	114
97	93	90	95	98	96	94	94	91	N.A.
105	100	97	97	98	100	103	106	111	115
95	92	89	88	87	86	84	87	88	92
603	601	595	602	611	617	627	632	628	551
101.:	100.2	99.2	100.3	101.8	102.8	104.5	105.3	104.7	110.2
-.095	-.1178	-.1290	-.1167	-.1002	-.1381	.1483	-.1681	-.2130	-.1978

Appendix: Table B

OFFICIAL VERSUS MARKET CURRENCY EXCHANGE RATE

(U.S. dollars per unit of foreign currency)

Year	India (Rupee)		Pakistan (Rupee)		Brazil (Cruzeiro)	
	Official[a]	Market[b]	Official[a]	Market[b]	Official[a]	Market[b]
1969	.1325	.0900	.2098	.1000	.2498[c]	.0002
1968	.1326	.0800	.2089	.1009	.3135[c]	.0002
1967	.1330	.0800	.2095	.1050	.3720[c]	.0003
1966	.1332	.0700	.2095	.1100	.0005	.0004
1965	.2094	.1050	.2096	.1050	.0006	.0004
1964	.2095	.1300	.2097	.1100	.0009	.0006
1963	.2101	.1550	.2103	.1300	.0017	.0013
1962	.2107	.1300	.2111	.1200	.0029	.0021
1961	.2091	.1375	.2096	.1150	.0040	.0035
1960	.2105	.1400	.2109	.1350	.0056	.0050
1959	.2110	.1500	.2114	.1300	.0070	.0068
1958	.2103	.1950	.2107	.1330	.0077	.0073
1957	.2094	.1900	.2098	.1300	.0145	.0130
1956	.2099	.2000	.2103	.1350	.0125	.0115
1955	.2090	n.a.[d]	.3013	n.a.[d]	.0550	.0134
1954	.2115	n.a.[d]	.3045	n.a.[d]	.0550	.0185
1953	.2113	n.a.[d]	.3043	n.a.[d]	.0550	.0233
Average	.1919	.1323	.2266	.1185	.0132	.0063
Average per U.S. dollar	5.26	7.56	4.41	8.44	75.76	158.73

Source: Wall Street Journal, Foreign Exchange Listings, 1953-1969.

[a] Selling prices for bank transfers in the U.S. for payments abroad.

[b] Market prices for foreign banknotes.

[c] Since July 6, 1948, the official exchange rate was 5.40541 cents per cruzeiro. On February 13, 1967, new cruzeiros were issued at the ratio of 1 to 1000 old cruzeiros.

[d] Not available.

FOOTNOTES

1. In addition to the official U.S. aid program, the private sector of the U.S. economy extends export credits and investments, accounting for approximately one-third of net global financial resource movements. As these financial flows are in the mainstream of the exchange economy, primarily motivated by profit considerations, we have not included them within the grants economy framework of this study.

2. O.E.C.D., Resources for the Developing World (Paris, 1970), p. 323.

3. Janos Horvath, "On the Evaluation of International Grants Policy," Public Finance, Vol. 26, No. 2 (1971).

4. The grants (or transfer) economy "consists of all one-way transfers of exchangeables. In an act of exchange between two parties, A and B, A gives something to B and B gives something to A. In a grant, A gives something to B and B gives nothing in the way of a clearly identifiable exchangeable to A. Exchange involves therefore bilateral or multilateral transfers whereas grants consist of unilateral transfers of exchangeables. This view of grants does not preclude the possibility that a grant from A to B may be accompanied by certain intangible transfers from B to A in the way of prestige or status, and so on, but these are not usually classified as exchangeables. The distinction between a grant and an exchange, therefore, is subject to some ambiguity but the fact that we have a fairly clear concept of an exchangeable makes the distinction workable: In an exchange of equal values, the net

.

worth of the parties is not changed; in a grant, however, the net worth
of the grantor is always diminished and that the the grantee is increased.
A grant or gift, moreover, is sometimes a sacrifice to the grantor."
Martin Pfaff and Anita Pfaff, "The Relationship between the Transfer
and Exchange Sectors of the Economy," American Statistical Associa-
tion 1969 Proceedings, of the Business and Economic Statistics Session
(Washington), pp. 532-3.

    5. Export-Import Bank of the United States.

    6. See recent proposals by Andrew M. Kamarck, "The Allocation
of Aid by Multilateral Agencies," in Kenneth E. Boulding, Janos Hor-
vath, and Martin Pfaff (ed.), The Grants Economy in International Per-
spective (Belmont, Calif.: Wadsworth, 1971, forthcoming).

    7. Even primary effects often meet with problems of valuation,
leading to the making of certain arbitrary assumptions. For example,
an aid flow consisting of a Public Law 480 (P.L. 480) dollar sale con-
tains the following grant element considerations:

    a. The aid cost to the U.S. is valued at supported domestic prices;
if it is valued at competitive world market rates, the grant ratio would
be reduced. Also, the surplus goods sold were not produced for the aid
program originally, but constituted a part of the U.S. exchange economy
during initial economic transactions. Their cost to the government
would therefore be affected. If the surplus commodities merely were
being stored, giving them away to save storage costs might be economi-
cally advantageous if the prospect of domestic usage was quite dim,
resulting in a grant ratio perhaps close to 0.

    b. From a benefit-to-the-recipient standpoint, the surplus com-
modities could be valued at the recipient country's prices, thus re-
ducing, or possibly increasing, the grant ratio. A decrease also may

occur if the recipient is not able to utilize the surplus commodities in an efficient manner. In addition, the commodities could upset the balance of the recipient economy's agricultural price structure, creating a negative "trading factor" effect (considered later).

c. Finally, computing the grant ratio with different arbitrarily chosen market rates of discount within the range of the interest rate structure in either the donor or the recipient economy would produce different magnitudes.

8. Goran Ohlin, Foreign Aid Policies Reconsidered (Paris: O.E.C.D., 1966), pp. 101-4.

9. Ibid. (An assumption is made that the principal is repaid in equal installments.)

10. Horvath, op.cit.

11. For a more complete discussion of the ramifications of aid tying, see: I.M.D. Little and J.M. Clifford, International Aid: A Discussion of the Flow of Public Resources from Rich to Poor Countries, Chapter VII (Chicago: Aldine Publishing Co., 1966); Clive S. Gary, Resource Flows to Less-Developed Countries (New York: Praeger, 1969).

12. The U.N. Conference on Trade and Development Secretariat has estimated that the reduction in the value of a loan due to tying is at least 10-20 percent.

13. For details in calculating the indexes used in the tied aid factor, see the Appendix, Table A.

14. Ohlin, op.cit., p. 94.

15. See Bimal Jalan, "Gains to Donor Countries From Tied Aid," Finance and Development (September, 1969), pp. 14-18.

16. In some cases, the borrower can be a public agency or a private enterprise within the recipient country. The loan then may involve repayment by the non-governmental borrower to the recipient

country government in local currency. The recipient government, in turn, repays the U.S. Agency for International Development in dollars. These loans are termed "two-step loans."

17. John Pincus, "The Cost of Foreign Aid," Review of Economics and Statistics, Vol. XLV (4) (November, 1963), p. 362. See also, Wilson E. Schmidt, "The Economics of Charity," Journal of Political Economy, Vol. 72 (August 1964), pp. 387-395.

18. Charles P. Kindleberger, Power and Money: The Politics of International Economics and the Economics of International Politics (New York: Basic Books, 1970), p. 135.

19. U.S. Department of Agriculture, P.L. 480 Concessional Sales, Economic Research Service, Foreign Agricultural Economic Report No. 65, September, 1970, p. 36. From 1956 to 1969, of $5.2 billion lent, the purchasing power depreciated by $0.8 billion. The local currency development loans are assumed to be reduced by approximately the same percentage.

20. Horvath, op.cit.

21. Horvath, op.cit. Also, Janos Horvath, "Rural America and the Grants Economy," American Journal of Agricultural Economics, Vol. 53 (November 1971, forthcoming).

22. P.L. 480 Concessional Sales, op.cit., p. 7.

23. Pincus, op.cit., p. 363, analyzed surplus agricultural commodity aid with three methods: (1) valued at U.S. prices, (2) valued at export market prices, and (3) valued at world market prices using estimates of elasticity of demand for U.S. exports.

24. For a thorough mathematical discussion of additional factors and refinements to the comprehensive grant ratio formula, see Janos Horvath and Donald P. Minassian, "A Mathematical Exposition of International

Grants." Also see: Janos Horvath and Donald P. Minassian, "Grant Erosion Due to Aid Tying," American Statistical Association 1971 Proceedings, Business and Economic Statistics Section (Washington).

25. Counterpart funds are the local currency proceeds of foreign aid. For more information, see Alexis E. Lachman, The Local Currency Proceeds of Foreign Aid (Paris: O.E.C.D., 1968), pp. 1-7.

26. Some conflict of definition is inevitable in this connection. For example, Mexico excludes any Eximbank transaction as foreign aid. (See I.M.D. Little and J.M. Clifford, op.cit., p. 233.)

27. P.L. 480 Concessional Sales, op.cit., p. 32.

28. Pincus, op.cit., p. 361. Pincus also used 5 and 5 3/4 percent to approximate the domestic opportunity cost and the World Bank lending rate, respectively. The change in grant elements attributable to the consideration of varying opportunity costs (above in our formula the comparative rate of discount, q), is the subject of another ongoing research. This latter also embraces the trade-off coefficients which result from the alteration of concessionary terms within the contracts. Preliminary results are available from the senior author.

29. This procedure is followed because detailed information is published regarding the country-use of funds from P.L. 480 sales, and the bulk of countries receiving surplus commodities also receive development loans repayable in local currency.

30. Year-by-year and country-by-country computations for 1964-1969 have also been made, and the results may be obtained from the authors upon request.

31. By 1971, all P.L. 480 sales will be on a dollar basis.

32. For an assessment of policy considerations, see: Lester B. Pearson (ed.), Partners in Development (New York: Praeger, 1969); Robert E. Asher, Foreign Aid: The Postwar Record and Targets for the

1970's (Washington: Brookings Institution, 1970); Willard L. Thorp,
"Foreign Aid: A Report on the Reports," Foreign Affairs Vol. 48
(April 1970) pp. 561-73.

33. Robert M. Stern, "International Financial Issues in Foreign
Economic Assistance to the Less-Developed Countries," in International
Seminar on Problems of Economic Development and Structural Change, edited
by I.G. Stewart (Edinburgh: Edinburgh University Press, 1969), p. 53.

34. Pincus, op.cit., p. 362.

·

o — 0 / /